



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,518	09/14/2005	Stefan Groetsch	12406-109US1/P20020639 US	1431
26161 7590 06/26/2007 FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER RODRIGUEZ, ARMANDO	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 06/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

A8

Office Action Summary

Application No.

10/522,518

Applicant(s)

GROETSCH, STEFAN

Examiner

ARMANDO RODRIGUEZ

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1-27-05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-8, 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (APA) in view of Spaeth (US 5,812,570).

Regarding claims 1, 10, 12, 13, 14, 15,

APA illustrates in figure 2 a semiconductor component (12), a cooling element (20), cooling channels (26), one region microstructures (32), as illustrated the semiconductor component overlaps the cooling channels. Page of the specification discloses the cooling element made by etching copper foils.

APA does not disclose an intermediate support disposed between the semiconductor component and the cooling element.

Spaeth illustrates in figure 1 a semiconductor component (1), a cooling element (7) and an intermediate support (3) disposed between the semiconductor component (1) and the cooling element (7), column 4 lines 40-50 discloses the intermediate support (3) compensating for mechanical stresses due to differing thermal expansion between the semiconductor component (1) and the cooling element (7).

Art Unit: 2828

Therefore, it would have been obvious to a person having ordinary skill at the time of the invention to combine the intermediate support (3) of Spaeth with the device of APA in figure 2, because it would reduce mechanical strains due to differing thermal expansion, as suggested by Spaeth in column 4 lines 40-50.

Regarding claims 2, 8,

In column 4 lines 40-50 Spaeth discloses the intermediate support (3) made of molybdenum, which does have a high modulus of elasticity.

Regarding claim 4,

Spaeth discloses in column 4 lines 48-50 the use of molybdenum for the material of the intermediate support (3), which will match the semiconductor component (1).

Regarding claims 5-7,

Column 4 lines 2-4 discloses the use of AuSn solder for connecting the semiconductor component (1) to the intermediate support (3).

Column 5 lines 16-18 discloses the use of AuSn for connecting the intermediate support (3) to the cooling element (7).

Regarding claim 11,

APA figure 2 does illustrate a collimating lens, but does not illustrate the lens on one and the same surface as the semiconductor component.

However, in accordance with MPEP 2144.04 VI C Rearrangement of parts, in the present application rearrangement of the collimating lens is considered an obvious design choice because the collimating regardless of its position would provide the same

Art Unit: 2828

function of collimating the beam, thereby the positioning of the lens does not modify the operation of the claimed invention.

Claims 3, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (APA) in view of Spaeth (US 5,812,570). as applied to claim 1 above, and further in view of Hall (US 4,525,178) and Razeghi et al (US 5,012,476).

Regarding claims 3 and 9,

In column 5 lines 16-18 Spaeth suggest and implies the use of an intermediate support (3) having a high modulus of elasticity.

Spaeth does not explicitly disclose the intermediate support made of a diamond composite material.

Hall discloses in column 1 lines 28-32 a diamond composite material, which has a high modulus of elasticity and column 8 lines 37-45 discloses the diamond composite material as including diamond and cobalt.

Therefore, it would have been obvious to a person of ordinary skill in the art to combine the diamond composite material of Hall with the APA of figure 2, because it will provide impact resistance due to its high modulus of elasticity.

Hall is silent as to the diamond having a thermal conductivity of about 1.5 times higher than copper.

However, it is well known in the art for diamond to have a thermal conductivity twice as great as that of copper, as described in Razeghi et al column 3 lines 55-58.

Art Unit: 2828

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ARMANDO RODRIGUEZ
Primary Examiner
Art Unit 2828

AR